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ABSTRACT

In 1982-83 the Jefferson County Public Schools (Kentucky) (JCPS) implemented a pilot effective schools project for 10 elementary buildings, based on the inservice program, "Creating Effective Schools," by Brookover and others (1982). This paper provides an overview of the origin of the program in JCPS, how the program was conducted, and a brief review of events through the first year. Outcomes of pilot schools are compared to district schools by an analysis of covariance using 1981-82 achievement and attendance as covariates along with various demographic controls. Results, computed as weighted school means based on standardized z-scores, reflect the gain in achievement for reading and math during the 1982-83 year. For reading (similar results were obtained for math), the average growth for the entire district, project schools, and remaining schools (n=87, 10, 77, respectively) was .080, .291, and .053 in standard deviation units. This strong statistical and educational significance was achieved under conditions of implementation that were far from ideal. Discussion involves planning, district support, institutionalization, possible Hawthorne effects, level of use, and other factors related to organizational change. (Author/MCG)

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THE JEFFERSON COUNTY EFFECTIVE SCHOOLS PROJECT:

DESCRIPTION AND ANALYSIS OF OUTCOMES

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Paper presented at American Educational Research Association Annual Meeting, New Orleans, April 23-27, 1984

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Abstract

In 1982-83 the Jefferson County Public Schools (JCPS) implemented a pilot Effective Schools Project for 10 elementary buildings, based on the inservice program, Creating Effective Schools by Brookover et al. (1982). This paper provides an overview on the origin of the program in JCPS, how the program was conducted, and a brief review of events through the first year. Outcomes of pilot schools are compared to district schools by an analysis of covariance using 1981-82 achievement and attendance as covariates along with various demographic controls. Results, computed as weighted school means based on standardized z-scores, reflect the gain in achievement for reading and for math during the 1982-83 year. For reading (similar results were obtained for math), the average growth for the entire district, project schools, and remaining schools (n=87, 10, 77, respectively) was .080, .291, and .053 in standard deviation units. This strong statistical and educational significance was achieved under conditions of implementation that were far from ideal. Discussion involves planning, district support, institutionalization, possible Hawthorne effects, level of use (LoU), and other factors related to organizational change.

THE JEFFERSON COUNTY EFFECTIVE SCHOOLS PROJECT:

DESCRIPTION AND ANALYSIS OF OUTCOMES*

Effective schools research has become one of the most talked about phenomena in educational circles, with both researchers and practitioners joining the movement. A primary reason for this popularity is the clearcut connection to possibilities for school reform: if a few schools can serve disadvantaged children well, then other schools can do so also if they adopt the practice and characteristics of naturally occurring exemplary schools.

But the school reform connection has also been the source of much of the criticism that effective schools research has generated. Specifically, some researchers have suggested that the movement is a "rhetoric of reform" with no substantive scientific basis (Ralph & Fennessey, 1983) or that the outliers research paradigm on which many of the studies rely is methodologically inadequate for making general claims (Rowan, Bossert, & Dwyer, 1983). More positively, but still guardedly, Cuban (1983) and Lezotte (1983) have suggested that there is yet much that is not known about effective schools as we turn to second generation research questions. Purkey and Smith (1983) offer sobering evidence on the quality of empirical studies in this field.

These reviews also reflect a peculiar trait of the school effectiveness literature, i.e., a high percent of reviews and persuasive essays in popular educational journals compared to the number of empirical studies in research journals. This would seem to be related to the urgency of school reform in the

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*The authors acknowledge the consultations of George Cunningham and Joe Petrosko of the University of Louisville on data analysis.

country; educators and the media alike are quick to welcome a "solution" to the problems in education. On the other hand, the actual scientific base of the movement may be stronger than some critics acknowledge. An historical perspective reveals the gradual merging of several strands of educational and social science research into the school effectiveness work; furthermore the school effects studies, coming from a tradition of large scale data bases, and the school effectiveness research are becoming more alike (Miller, 1983), suggesting that generalizations based on case studies and "outliers" may not be so suspect after all.

One way of addressing the substantive concerns of the movement is to evaluate outcomes of change projects based on the effective schools characteristics. Such questions include: do exemplary schools really exist or are they merely statistical aberrations? are the characteristics of effective schools causally related to achievement outcomes? what will longitudinal studies show about the dynamics of effective schools and change processes? The logic of evaluation studies is as follows: if an effective schools project produces improved achievement, then many of the doubts pertaining to causality, generalization, existence, etc., that arise from case studies or cross-sectional data can be addressed directly. This form of triangulation (causal-longitudinal corroboration) strengthens the case for the effective schools research.

Of course, change studies have their own problems. Causal attributions are questionable due to such factors as the "volunteer" status of participant schools, Hawthorne effects, or the assurance that any gains that might occur are associated with the intervention as opposed to some other extraneous variable. However, the process of demonstrating causal principles in the social sciences is always painstaking. Evidence that confirms or disproves theoretical statements is accumulated gradually; seldom does a single study ever prove

decisive. The strengths and weaknesses of evaluation studies must be considered, but it must also be remembered that those strengths and weaknesses are different from those of case studies or cross-sectional analysis.

The current study addresses several of the issues raised in this brief review. Specifically, the study reports empirical outcomes of a year long effective schools project for 10 elementary schools in an urban county-city district.

Setting

The Jefferson County Public Schools (JCPS) is the largest urban district in Kentucky. Over 92,000 students attend 153 schools, including 86 elementary, 23 middle, 20 high, 8 vocational, 11 special education, and 5 other centers. Almost one-half of the current enrollment (1983-84) is in elementary schools at grades K-5, as indicated in Table 1.

Table 1

School Enrollment Figures for JCPS (1983-84)

School Level	Grade	Enrollment Number	Percent
Elementary	K-5	43,361	46.8
Middle	6-8	22,348	24.1
High	9-12	26,943	29.1

The current racial composition of the district is approximately 71 percent white and 29 percent black and other students. Since 1975, when the Jefferson County Public Schools merged with the former Louisville Independent District, the district has provided busing for desegregation of those schools whose attendance areas are racially imbalanced. During the 1982-83 school year, approximately 11,800 students were transported for the purpose of desegregation.

The 1983-84 operating budget for the district is $219.5 million. Approximately 81.1 percent of this budget is allocated for personnel salaries. The average teacher salary for the district exceeds both the average for Kentucky and the nation. See Table 2.

Table 2

Comparison of JCPS Teacher Salary

Average Teacher Salary		
JCPS	Kentucky	Nation
$22,710	$19,780	$22,047

The per pupil expenditure for the district is also above the average expenditure for Kentucky and is close to the national average. See Table 3.

Table 3

Comparison of JCPS Per Pupil Expenditure

Per Pupil Expenditure		
JCPS	Kentucky	Nation
$2,775	$2,550	$3,187

In addition to the regular program, several optional, special, and compensatory programs are offered, including the Advance Program for gifted and talented, Traditional Schools, Exceptional Child Education, and Chapter I programs at the elementary level.

Two areas of major district emphasis have been attendance improvement and academic excellence. In recent years, district wide attendance has risen to 93.5 percent as shown in Figure 1.

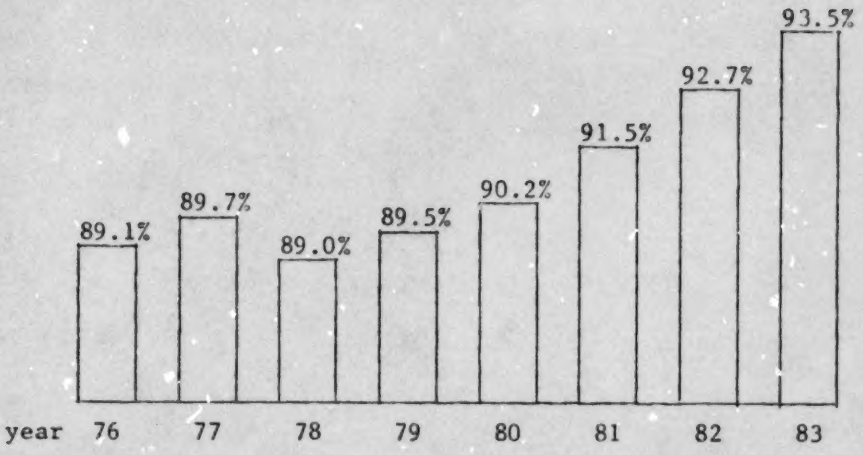

Figure 1. JCPS District Attendance Rate 1976-1983

District-wide achievement on the Comprehensive Test of Basic Skills-Form U (CTBS-U) has also increased and exceeds the level for the state as shown in Table 4, adapted from a summary of statewide testing results (Kentucky Department of Education, 1983).

Table 4

Comparison of Percent JCPS and Kentucky Students Scoring At or Above the National Median on the CTBS-U

CTBS-U (Percent Scoring At or Above the National Median)

	Reading	Language	Math
Grade 3			
JCPS	62	77	72
Kentucky	59	69	68
Grade 5			
JCPS	56	58	65
Kentucky	49	48	53
Grade 7			
JCPS	55	56	56
Kentucky	52	53	50
Grade 10			
JCPS	50	54	55
Kentucky	44	51	47

The JCPS Effective Schools Project

In the summer of 1981, a new superintendent took over the JCPS with a mandate to improve the schools and raise achievement. One of his first priorities was to appoint a committee to establish a long range plan for staff development consistent with Board goals for better education and higher achievement. In an act of collaboration with the University of Louisville School of Education, three university faculty were appointed to the staff development committee. The senior author, a new faculty member, was one of those appointed.

The major thrust of the staff development plan developed during the 1981-82 year was Clinical Supervision for administrators and the Teaching-Learning Process as the inservice component for teachers (all Kentucky teachers are required to have 24 hours of inservice per year as a part of each district's master inservice plan). The Clinical Supervision and Teaching-Learning Process were developed and adapted from Madeline Hunter's work by JCPS district consultant Erlene Minton.

In addition to the district's emphasis on Clinical Supervision, some other options were available for teachers. One of these was the Effective Schools Project, based on the inservice program Creating Effective Schools (Brookover, Beamer, Efthim, Hathaway, Lezotte, Miller, Passalacqua, & Tornatzky, 1982). During spring, 1982, 10 elementary schools opted for this program. Each faculty committed itself to the entire 24 hours of inservice on the manual Creating Effective Schools and the activities therein.

The actual implementation of the project occurred under less than ideal conditions. The district provided no formal support other than the purchase of the manual. Pre-planning time amounted to no more than a couple of meetings between the senior author (who assumed duties of Project Director and Consultant),

the 10 principals, and the Director of Instruction for one of the three Regional Offices in the district. Because of time constraints, the preferred mode of implementation--training by the Consultant for the principals who would in turn present the inservice to their respective staffs--gave way to 12 hours of inservice for all site staffs prior to school in August, 1982. The Project Consultant was left to assume this role. This approach could have proved quite effective had it been possible to meet each staff in its own school; but time restraints resulted in six staffs in a school gymnasium for two days, repeating the process in another gym for the other four schools. To make matters worse, a 3-hour follow-up inservice on three topics--school discipline, mastery learning, and academic team games--was presented in person to one staff selected at random while the other nine schools viewed a videotape of the presentation.

The problems just noted were indicative of the lack of personnel and planning time throughout the Project. While the principals and Consultant met monthly to discuss problems and procedures of implementation, and the Consultant was able to visit the schools occasionally, for the most part the principals and their staffs were on their own.

But problems went beyond personnel and time. Because the Consultant, a U of L faculty member, had no formal ties to JCPS and since there was no officially designated administrator responsible for the project, the Consultant and 10 schools were in limbo. The one Director of Instruction provided some encouragement and moral support, but the lack of formal organizational sanctions or rewards was a deterrent to greater implementation. At the same time, it had become very clear that the district's Clinical Supervision program was not simply an option. All principals, including those in the Effective Schools Project, perceived that attending Clinical Supervision inservice training was

in their best interest. An inevitable result of this expectation was that attendance at and enthusiasm for the "volunteer status" Effective Schools Project meetings and activities waned among some principals.

Politically it was evident that the district was emphasizing Clinical Supervision. Other options were perceived as secondary in importance and favor to the Superintendent. (An interesting research point is just how accurate were the perceptions that the Superintendent was really not very interested in options or programs other than Clinical Supervision. There is little doubt, though, that the perception that he was not had its effect on behavior relevant to the Effective Schools Project.) The long term result of this perception was a gradual change in how the Effective Schools Project was viewed. Originally, the project was conceived as a multiple-year program. By spring of 1983, however, the project had become a one year experiment; principals expected to continue informally some of the activities and concepts of the program, but there would be no formal school participation in the 24 hour inservice requirement for the next year.

Thus a variety of constraints--time available for pre-planning, personnel, inservice facilities and procedures, political perceptions of the project's favor, staff reactions to workload associated with the project, status of the project as a "temporary experiment," the lack of formal connections to the authority structure of JCPS, as well as any personality factors that inevitably clouds such programs--combined to produce a less than favorable environment for the implementation of the Effective Schools Project. These constraints of course are balanced by factors such as the Hawthorne effect and the "volunteer" status of schools that opted for the program. Volunteer schools may possess a "readiness-for-change" that non-project sites do not. Given these possible variations, strict attribution of causal effects is not possible with the data

available. Nevertheless, analysis of the project does provide useful evidence, as detailed below.

Description of Data

The data utilized in this study are available from the district. A description and an explanation of the operational definitions that were used for the analyses are given here. The data include attendance by school, information on free, reduced, and paid lunch from which an estimate of school level socioeconomic status (SES) is constructed, percent white in each school, and separate scores for Total Reading and Total Math on the Comprehensive Test of Basic Skills-Form U (CTBS-U). Information for both 1981-82 and 1982-83 are available for all data.

Data for the percent average attendance and percent white for the year by school were obtained from district records. A caveat is in order here. Based on demographic studies across the nation, percent white has been shown to have a positive correlation with achievement. There is no suggestion that there is a causal link between race and lower achievement; rather, demographic studies reflect the reality that in America minorities are highly overrepresented among the poor. Yet both high income minorities and low income whites are common. Probabilistically, however, positive correlation for percent white holds up, although the suggestion is clear that as SES is held constant, the effects of race tend to disappear.

A socioeconomic status (SES) factor for each school was determined based on the percent of students receiving free lunches, reduced lunches, and paid lunches. The number of free and reduced lunches per school was obtained from district records. The percent of paid lunches was calculated by subtracting the percent free and the percent reduced from 100 percent. The percent of paid lunches includes both those who pay for their lunch and those who carry their own.

Upon examination of the district guidelines for free or reduced lunch eligibility, it was found that there was a ratio of .7 between free and reduced lunches based on the ceilings for income and family size. The SES factor was operationally defined by using the .7 ratio calculated between free and reduced and by projecting a similar ratio between reduced and paid lunches.

The operational definition for school SES was derived from a linear transformation of the lunch data as follows:

School SES = (1 x % free) + (1.429 x % reduced) + (2.037 x % paid).

The range for the SES factor is 100 to 203.7 with 100 indicating low SES.

This operational definition of SES probably underestimates the actual SES of a school. The .7 ratio between reduced and paid was an arbitrary decision and does not adequately represent the range of higher family incomes beyond the projected ratio. Therefore, underestimation is a greater likelihood in schools with a higher incidence of paid lunches.

Familiarity with profiles of individual schools within the district provides face validity for the obtained school SES factor. An additional form of face validity is suggested by comparing 1981-82 data to 1982-83. Overall the scores go down for the second year. This is consistent with the increase in unemployment that occurred during the recent recession. Furthermore the schools that dropped the most were those in the middle and upper ranges of the scale. This is consistent with a floor effect; schools with a high percent free lunch have little room for decrease while schools with middle or working class parents who become unemployed would be likely to go from paid to reduced or free lunch status.

Achievement scores for reading and mathematics were taken from district reports of performance for each grade by school on the CTBS-U. The scale score is the basic score for the CTBS-U and is calculated based on Item Response

Theory (IRT) in accordance with a three-parameter statistical model. A discussion of definitions and procedures are located in the Comprehensive Tests of Basic Skills manuals (1982a, 1982b).

For each grade within each school, z-scores were calculated. This was done by finding the difference between the average scale score for the local grade and the respective grade mean for the national norming sample. This difference was then divided by the respective grade-level standard deviation of the norming sample.

A z-score for the school was calculated by multiplying the grade z-score by the number of students per grade, summing those products for the five grades within the school, and dividing by the total number per school. This procedure accounts for varying numbers of students per grade-level and appropriately weights the school mean z-score.

Table 5 shows the means and standard deviations of the norming sample.

Table 5

CTBS-U Spring Norms and Standard Deviations by Grade for Reading and Math, IRT Scoring

	Total Reading		Total Math	
	Norm	Standard Deviation	Norm	Standard Deviation
Grade 1.7	475	93.8	448	115.4
2.7	576	72.3	579	60.2
*3.7	620	68.6	635	40.7
4.7	655	54.6	666	34.6
5.7	695	65.0	686	27.6

*Third grade norm tables are for Level E; JCPS administer Level F. However, IRT scale scores are considered to be level independent.

Data Analysis and Results

The data reported here include means and standard deviations for three categories--all elementary schools, the 10 Effective Schools Project sites, and the remaining 77 Control Schools. Individual results for the Effective Schools Project sites are reported only in one instance, to illustrate variability between schools. Information on correlation tables and regression equations is provided as appropriate. All achievement scores are given in z-score units as described above.

Table 6 presents the means and standard deviations for the three categories for the variables used in the regression analyses. The dependent variables--reading and math scores for 1982-83--are entered in the table first, followed by the independent variables entered in the listwise regression procedure according to the a priori ordering of the variables.

Reasoning behind the a priori listing of the variables is dependent on commonly accepted relationships among demographic factors and the interest in the dependent variables (1982-83 achievement) with the effects of the previous year's achievement controlled. The strongest relationship would be expected to be previous (1981-82) achievement, a measure that already reflects SES, percent white, and attendance for 1981-82. The effects of measures for 1982-83 for SES and percent white are then partialed out; SES is entered first because the effects of race generally are attenuated when SES is controlled. Attendance for 1982-83 follows, to check for any variance that may be accounted for by gross measures of time available for learning. Finally, the N of the building is entered on the chance that size of the school may have some effect on achievement.

Table 6

Means and Standard Deviations for Dependent and Independent Variables by Group

	All Schools (N=87)*		Effective Schools (n=10)		Control Schools (n=77)*	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
**1982-83 Reading	0.242	0.290	0.174	0.327	0.251	0.285
**1982-83 Math	0.312	0.235	0.322	0.241	0.311	0.234
**1981-82 Reading	0.162	0.611	-0.118	0.397	0.198	0.632
**1981-82 Math	0.217	0.512	0.028	0.286	0.242	0.533
SES 1982-83	147.489	21.590	136.615	26.585	148.939	20.902
% White 1982-83	69.082	9.705	67.830	11.311	69.244	9.496
% Attendance 1982-83	94.913	0.819	94.520	0.995	94.964	0.795
***School N 1982-83 Reading	340.977	90.935	341.100	105.375	340.961	89.070
***School N 1982-83 Math	341.207	90.830	341.200	105.197	341.208	88.975

*The district has 86 elementary schools. One all grade optional school is also included in the analysis.

**All achievement data are given in z-score units derived from CTBS-U scale scores.

***Figures for school N reading and school N math are based on the number of students tested in the respective subject area.

In addition to the achievement results, which are presented in more detail in later tables, one interesting finding is the 1982-83 SES factor. The Effective Schools Project at 136.615 is about 12 points lower than the Control Schools average. This seems consistent with the location of the schools since 7 of 10 are in inner city or lower income areas. This is also consistent with the fact that the Effective Schools Project has lower achievement for both reading and math for 1981-82. The other finding of note in Table 6 relates to the last four variables listed. These indicate very small or no differences in the means of the Effective Schools Project versus the Control Schools for 1982-83 data.

Four tables are included in an Appendix. Tables 11 and 12 present Correlation Coefficients for the variables listed in Table 6 for reading and math, respectively. Tables 13 and 14 present a breakdown of the z-scores for reading and math achievement, respectively, by grade level by category for 1981-82 and 1982-83. Change scores from 1981-82 to 1982-83 are also included.

Table 13 on reading reveals several trends. First, the entire district (All Schools) moved in a positive direction for all grades, as indicated by the Change in Mean column. However, the change varied considerably from grade to grade, ranging from .179 standard deviation increase in grade 3 to only .016 increase in grade 5. This variability between grades is repeated for the schools in the two project categories. When comparing the Change in Mean column for the Effective Schools Project and the Control Schools, a striking difference is noted. The increase in z-score units for the Control Schools is less than the entire district for each grade. The increase in z-score units for the Effective Schools Project is above the district for each grade and substantially so for all grades except fifth. The actual increases in standard deviation units for the Effective Schools Project ranges from a high of .434 in grade 1 to a low of .068 in grade 5. Over all grades, the Effective Schools Project exhibited an increment of .291 z-score units, a change that seems substantial in one year.

Table 14 on mathematics indicates highly similar findings. Although the exact figures vary slightly, the same statements can be made for achievement in math as in reading: the Effective Schools Project comes out ahead on Change in Mean scores, and substantially so at some levels, for all grades.

The substantial increase of the Effective Schools Project over the Control Schools is also illustrated in Table 7, which gives reading weighted school mean z-scores for the district and the project categories for 1981-82, 1982-83,

and Change in Mean. Although this summary information is also given in Table 13, Table 7 lists the weighted school mean for each of the 10 Effective Schools Project sites separately. Once again, a striking feature is evident. The variability between schools is considerable, ranging from an increase of .538 standard deviation units for School I to a low of .069 for School A. Table 8 presents the same information for math, and again the variability between schools is considerable, ranging from a high of .595 z-score units, again for School I, to a low of .121 units for School B. One other trend is evident in Tables 7 and 8. Except for School A which did much better in math than in reading, the schools were all fairly consistent in the extent of their gains across reading and math.

Table 7

Reading Weighted School Mean z-Scores for 1981-82, 1982-83, and Change in Mean

	1981-82		1982-83		
	Mean	Standard Deviation	Mean	Standard Deviation	Change in Mean
All Schools	0.162	0.611	0.242	0.290	0.080
Effective	-0.118	0.397	0.174	0.327	0.291
A	0.029		0.098		0.069
B	0.647		0.766		0.119
C	0.121		0.328		0.208
D	0.368		0.689		0.322
E	-0.413		-0.195		0.218
F	-0.425		0.067		0.491
G	-0.171		0.143		0.314
H	-0.412		-0.010		0.402
I	-0.555		-0.017		0.538
J	-0.374		-0.145		0.229
Control	0.198	0.632	0.251	0.285	0.053

Table 8

Math Weighted School Mean z-Scores for 1981-82, 1982-83, and Change in Mean

	1981-82		1982-83		
	Mean	Standard Deviation	Mean	Standard Deviation	Change in Mean
All Schools	0.217	0.512	0.312	0.235	0.095
Effective	0.028	0.286	0.322	0.241	0.295
A	0.105		0.280		0.175
B	0.659		0.780		0.121
C	0.108		0.264		0.156
D	0.347		0.680		0.333
E	-0.065		0.213		0.278
F	-0.169		0.180		0.349
G	-0.122		0.308		0.430
H	-0.153		0.199		0.352
I	-0.234		0.361		0.595
J	-0.201		-0.041		0.159
Control	0.242	0.533	0.311	0.234	0.070

Finally, Tables 9 and 10 present a regression analysis for total reading and total math, respectively. The procedure used is listwise regression from the SPSS package which computes an incremental R^2 for each successive variable entered into the equation as determined by the researchers' theoretical a priori ordering (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975; Hull & Nie, 1981). The general model for the univariate regression equation is as follows (Hull & Nie, 1981, p. 42):

$$Yi = \beta_0 + \beta_1 X_{i1} + \ldots + \beta_p X_{ip} + \varepsilon_i$$

Standardized coefficients are reported in the regression analysis tables. Also given are R^2, R^2 change, and the significance of the change for the final regression equation.

Table 9

Regression Analysis for Reading Achievement

Independent Variables	Dependent Variable: Reading Total 1982-83	R^2	R^2 Change	Significance of Change
Reading Total 1981-82	0.767	0.8328	0.8328	0.0000
SES 1982-83	0.172	0.8470	0.0142	0.0071
% White 1982-83	-0.002	0.8473	0.0003	0.7027
Attendance 1982-83	0.069	0.8489	0.0016	0.3598
School N 1982-83 (Reading)	-0.010	0.8489	0.0000	0.9899
Effective/Control	-0.173	0.8764	0.0275	0.0001

Table 10

Regression Analysis for Mathematics Achievement

Independent Variables	Dependent Variable: Math Total 1982-83	R^2	R^2 Change	Significance of Change
Math Total 1981-82	0.722	0.6785	0.6785	0.0000
SES 1982-83	0.130	0.6845	0.0060	0.2157
% White 1982-83	-0.078	0.6912	0.0067	0.1892
Attendance 1982-83	0.093	0.6943	0.0031	0.3708
School N 1982-83 (Math)	0.012	0.6948	0.0005	0.7133
Effective/Control	-0.215	0.7389	0.0441	0.0005

For 1982-83 reading total, scores from the previous year contribute the strongest source of explained variance, an R^2 of 0.8328. The 1982-83 SES factor also accounts for a significant amount of the variance in the dependent variable. The independent variables, % white, attendance, and school N, all for 1982-83, account for minute, insignificant changes in the variance explained. The last variable entered into the regression equation, experimental group, was significant, accounting for an additional 0.0275 R^2 for the 1982-83 reading scores. In this analysis 87.64 percent of the between school variance is explained.

Using math achievement as the dependent variable gives similar results with one exception. Math achievement for the previous year and experimental group are the only independent variables that contribute significantly to the variance explained in 1982-83 math test scores. In this case, the SES factor does not account for a significant amount of variance. In this analysis 73.89 percent of the between school variance is explained; the Effective Schools Project-Control Schools account for 0.0441 of this explained variance.

Conclusions

Two trends are evident in the data.

First, the 10 schools in the project are in general lower SES and more inner city than the district as a whole. This is reflected in the substantially lower z-scores for both reading and math for 1981-82 for the Effective Schools Project compared to the Control Schools. After one year, the situation has changed considerably. For math weighted school means the Project Schools have caught up with and gone slightly ahead of the Control Schools; for reading, the Project Schools are still below the Control Schools but the difference is now slight. These shifts are reflected in the z-scores for the change in mean from 1981-82 to 1982-83 for both reading and math: the Effective Schools Project

is substantially higher than the Control Schools for each grade level and for the weighted school mean.

Second, the change from 1981-82 to 1982-83 indicates that the entire district has improved. This is so for All Schools, Effective Schools Project, and Control Schools. But an examination of the z-scores for the change in mean suggests that the actual change in terms of standard deviation units is slight for the district as a whole and for the Control Schools. For the Project Schools, however, the change is educationally important; the overall change for weighted school means is .291 for reading and .295 for math. In both cases, this change approaches a third of a standard deviation averaged across grade level and schools. Several of the schools did even better than this average and for School I the change was spectacular, over half a standard deviation in z-scores: .538 in reading and .595 in math.

The data reveal that the Effective Schools Project is associated with substantial change in school means compared to the Control Schools. This is confirmed by the regression analysis. What these data do not permit is any type of strict causal attribution for these increases to the Effective Schools Project. A discussion of confounding variables and some related issues is taken up in the last section.

Discussion

Although The Effective Schools Project is clearly associated with a substantial increase in achievement for both reading and math, a key question is whether these results can be attributed to the Project, given the existence of confounding variables.

For example, a Hawthorne effect (Roethlisberger & Dixon, 1947) is a possibility that cannot be ruled out. On the other hand, the district's Clinical Supervision program, including the Teaching-Learning Process, was

implemented throughout the remainder of the district at the same time that the Effective Schools Project was started. Thus the Control Schools also could have benefited from a Hawthorne effect. It may not be possible to determine if the strength of the effect in the two programs was equal. The Project inservice was more concentrated, but the Clinical Supervision was associated with the official district inservice policy.

A second variable is the volunteer status of the Effective Schools Project. Literature on change suggests that a "readiness" factor can exist in volunteer versus non-volunteer subjects. The effect noted may simply be that the faculties in the Project were simply more ready for change and more accepting of new ideas and programs. Although there apparently was some discussion of electing the Effective Schools Project as a means of delaying the Clinical Supervision model in some of the 10 schools, and since all schools were forced to "choose" one program or the other, both factors that attentuate the positive effects of being volunteer subjects, the volunteer status "readiness for change" cannot be entirely ruled out.

Third, the level of use (LoU) concept (Hall & Loucks, 1977) provides some evidence on the attribution of causality. LoU data are not available for the Project (a post hoc study is in planning stages at this time), but the variability of gains across grades and schools is suggestive. Hawthorne effects and volunteer status would seemingly produce similar effects within schools (across grades) even if these effects were perceived somewhat differently across the 10 Project buildings. On the other hand, the LoU concept would be consistent with significant variation both within and between schools. The data for the Effective Schools Project reflect this. To the extent that a LoU explanation accounts for the variability in scores, causal attribution of the gains to the Project itself is strengthened. Unfortunately there is insufficient

data to separate natural variability, Hawthorne effects, volunteer status, or the Project.

A second issue concerns institutionalization of the effective schools program as a continuing aspect of the district. At this point, the prospects do not look good. The district never assumed ownership of the program. It was apparently perceived as a university based experimental project that was only temporary. Research suggests that, when programs are not continued intensively for a period of three or more years, the effects tend to diminish and the intervention is unlikely to become firmly entrenched, i.e., status quo ante rules.

Another issue relates to the criticisms of the substance of the effective schools research. If an effective schools project produces results such that target sites become more like exemplary models, then a form of longitudinal-causal data on the relationship between characteristics of effective schools and achievement outcomes is available that is not possible in studies based on cross sectional data or case histories. Although the evidence is attenuated by the confounding variables that cannot be totally ruled out in this instance, this study provides confirming evidence that the effective schools research is sufficiently substantive to produce achievement gain when implemented.

Finally, some reflections on educational effects versus scientific confidence in those effects are in order. First, it must be remembered that the success of the Effective Schools Project was achieved despite shortage of personnel, lack of adequate pre-planning, a less than favorable political climate, and no formal organizational ties. The results are all the more remarkable given this context. Second, even if Hawthorne or volunteer-status effects cannot be totally ruled out from a scientific perspective, the fact is that, educationally, the Project schools improved substantially and children

benefited. But the researcher's quest for understanding that will generalize to other situations with consistency produces skepticism over the same results that cause practitioners and reformers to rejoice. Meanwhile that success is why the effective schools movement has become a "rhetoric of reform": educators and the public want improvement, but are less concerned with the scientific reasons why, as long as the results are positive.

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APPENDIX

Table 11

Correlation Coefficients for Dependent and Independent Variables Entered in Regression Analysis for Reading Achievement

	Reading Total 1982-83	Reading Total 1981-82	SES 1982-83	% White 1982-83	Attendance 1982-83	School N 1982-83 (Reading)	Effective/ Control
Reading Total 1982-83	1.000						
Reading Total 1981-82	0.645	1.000					
SES	0.856	0.874	1.000				
% White 1982-83	0.259	0.073	0.406	1.000			
Attendance 1982-83	0.658	0.445	0.703	0.099	1.000		
School N 1982-83 (Reading)	0.186	-0.069	0.254	0.244	0.141	1.000	
Effective/ Control	0.086	0.165	0.183	0.047	0.172	-0.001	1.000

Table 12

Correlation Coefficients for Dependent and Independent Variables Entered in Regression Analysis for Math Achievement

	Math Total 1982-83	Math Total 1981-82	SES 1982-83	% White 1982-83	Attendance 1982-83	School N 1982-83 (Math)	Effective/ Control
Math Total 1982-83	1.000						
Math Total 1981-82	0.562	1.000					
SES 1982-83	0.730	0.834	1.000				
% White 1982-83	0.184	0.078	0.406	1.000			
Attendance 1982-83	0.599	0.431	0.703	0.099	1.000		
School N 1982-83 (Math)	0.246	-0.039	0.247	0.232	0.135	1.000	
Effective/ Control	-0.015	0.134	0.183	0.047	0.172	0.000	1.000

Table 13

Reading z-Scores by Group and Grade for 1981-82, 1982-83, and Change in Mean

	1981-82		1982-83		
	Mean	Standard Deviation	Mean	Standard Deviation	Change in Mean
All Schools					
Weighted school mean	0.162	0.611	0.242	0.290	0.080
Grade 1	-0.142	0.702	0.016	0.327	0.158
2	0.173	0.361	0.314	0.300	0.141
3	0.120	0.345	0.299	0.341	0.179
4	0.350	0.373	0.498	0.390	0.148
5	0.173	0.275	0.189	0.276	0.016
Effective					
Weighted school mean	-0.118	0.397	0.174	0.327	0.291
Grade 1	-0.498	0.306	-0.064	0.219	0.434
2	-0.072	0.391	0.272	0.325	0.344
3	-0.064	0.421	0.301	0.436	0.366
4	0.121	0.594	0.411	0.549	0.290
5	-0.009	0.395	0.059	0.380	0.068
Control					
Weighted school mean	0.198	0.632	0.251	0.285	0.053
Grade 1	-0.095	0.735	0.027	0.337	0.122
2	0.205	0.357	0.319	0.297	0.114
3	0.144	0.335	0.299	0.328	0.155
4	0.380	0.337	0.509	0.366	0.129
5	0.196	0.257	0.206	0.261	0.009

Table 14

Math z-Scores by Group and Grade for 1981-82, 1982-83, and Change in Mean

	1981-82		1982-83		
	Mean	Standard Deviation	Mean	Standard Deviation	Change in Mean
All Schools					
Weighted school mean	0.217	0.512	0.312	0.235	0.095
Grade 1	0.011	0.592	0.157	0.305	0.146
2	0.197	0.397	0.340	0.312	0.143
3	0.199	0.303	0.373	0.285	0.174
4	0.256	0.254	0.414	0.272	0.158
5	0.300	0.275	0.349	0.272	0.048
Effective					
Weighted school mean	0.028	0.286	0.322	0.241	0.295
Grade 1	-0.249	0.201	0.172	0.131	0.421
2	0.057	0.432	0.392	0.336	0.336
3	0.105	0.330	0.404	0.369	0.300
4	0.135	0.296	0.410	0.348	0.275
5	0.151	0.408	0.270	0.319	0.119
Control					
Weighted school mean	0.242	0.533	0.311	0.234	0.070
Grade 1	0.044	0.622	0.155	0.320	0.110
2	0.216	0.393	0.333	0.309	0.117
3	0.212	0.300	0.370	0.273	0.158
4	0.272	0.248	0.415	0.262	0.143
5	0.320	0.255	0.359	0.265	0.039